Universities, Organizational Structure of the Research Activity and the Spin-off Formation: Lessons From Brazilian Case

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Brazil Overview

Area - 8.514.876,599 km2

Population – 187 Millions

GDP 2007 – US$ 1.067 billion

Flag -

Population per region:

1) South Region – 14,8%

2) South east Region – 42,6%

3) North east Region – 28,1%

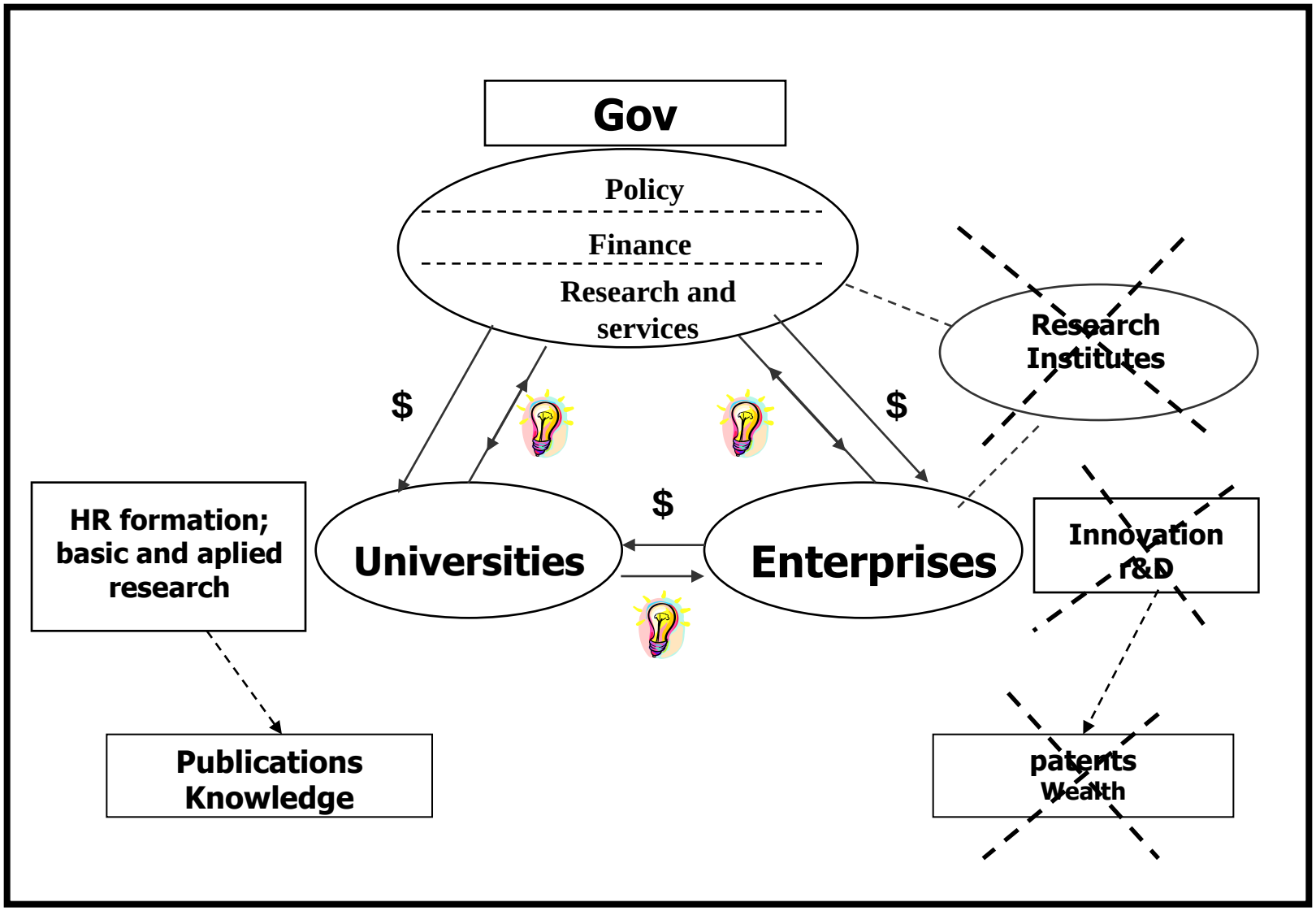
4) Middle west Region – 6,9%

5) North Region – 7,6%

Source: IPEA data (2008)

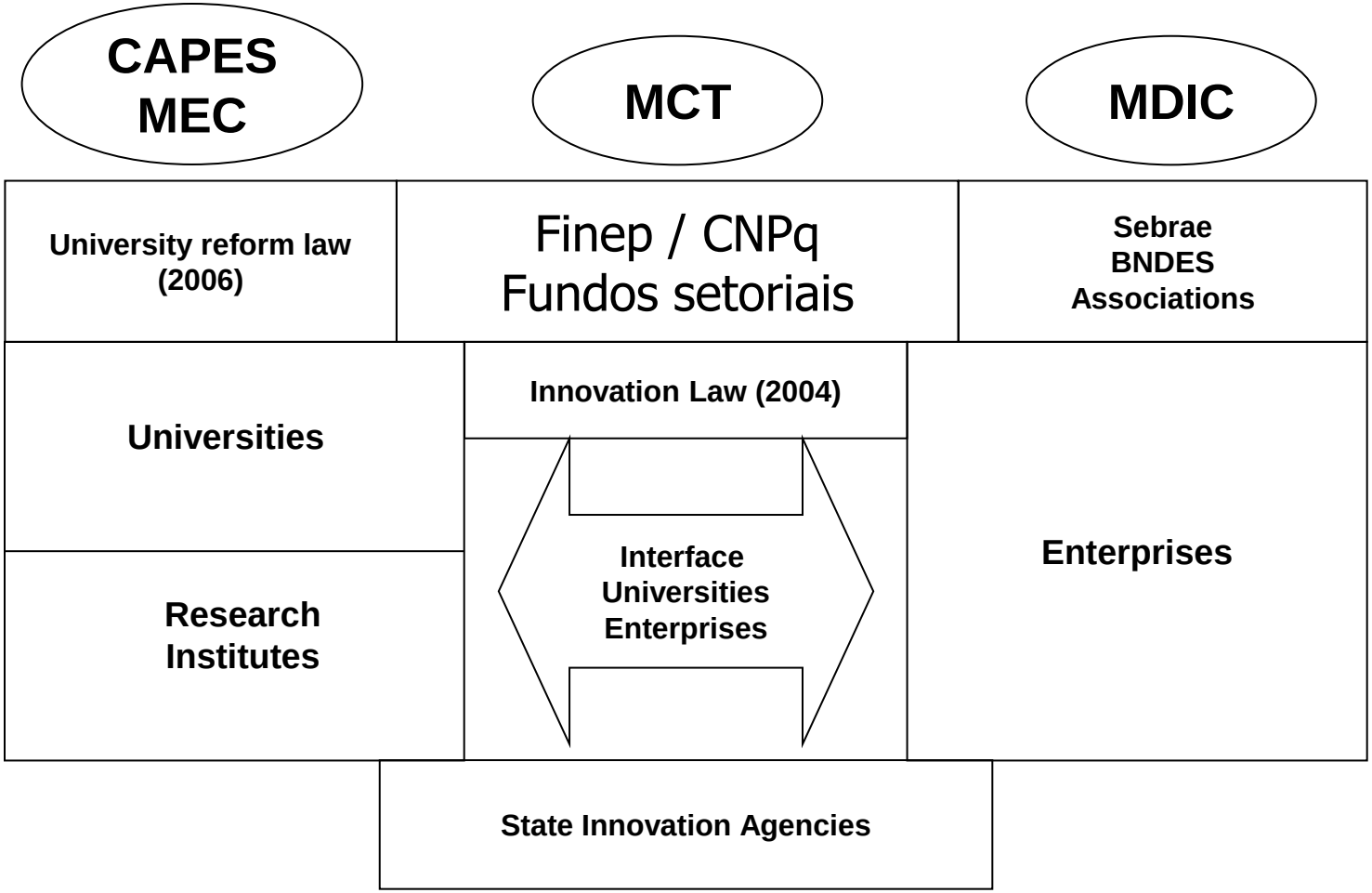
Government policy for the innovation system

Brazilian System of Innovation



Source: Resende (2005) III Conferência Nacional de C&T&I

Government Policy



HEIs in Brazil and their relation with the Innovation System

	Features of Industrialization	University Functions
1920-1950	Heterogeneous industrialization, with offshore technology incorporated in imported equipment, and the immigration of foreign technicians.	Scarcity of Institutions of higher Education (schools of engineering)
1950-1970	Industrialization based on import substitution, with the creation of subsidiary companies for production by multinational corporations and state-owned companies in primary sectors and public services	Training of human resources (engineering) of as part of the process of industrialization
1970-1990	Diversification of the industrial base. Leading edge Industries based on endogenous technology and the increasing number of Brazilian employees at the managerial levels of multinational corporations	Training of specialized human resources and research scientists for the learning process

Source: Maculan (1996)

HEIs in Brazil (2006)

HEIs Type	Universities	Other HEI	Totals
Federal	52	45	97
States	33	42	75
Municipals	5	54	59
Total Publics	90	141	231
Pro-profit	25	1495	1.520
Non-profit	61	353	414
Total Privates	86	1848	1.934
Total HEI	176	1989	2.165

4,5 million enrolled students

18-24 years old: 11% enrolled in HEIs

Source: INEP (2007) – Census

Graduation programs in Brazil

Lato Sensu

Around

350.000 enrolled students

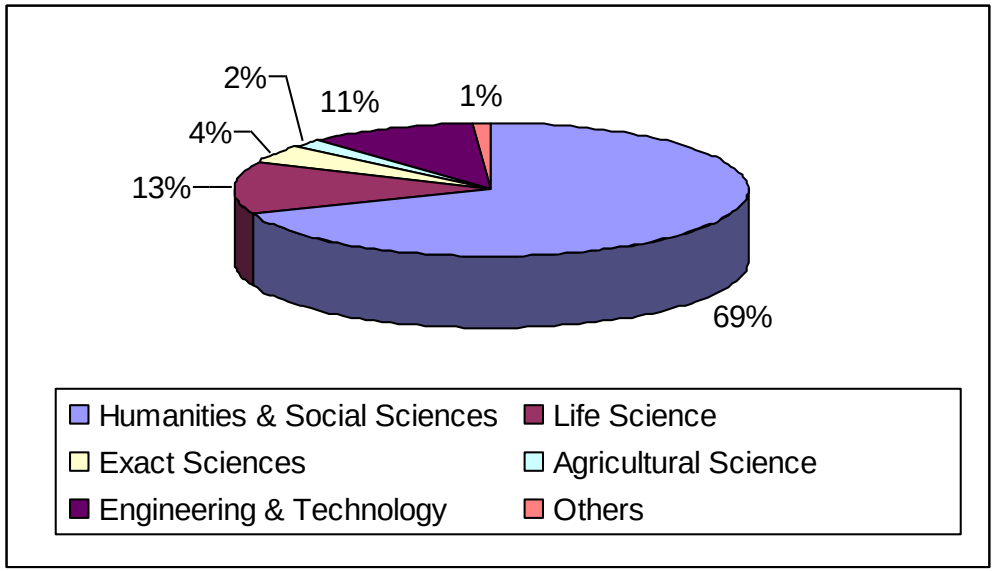
45% of HEIs offer lato sensu courses

Stricto Sensu

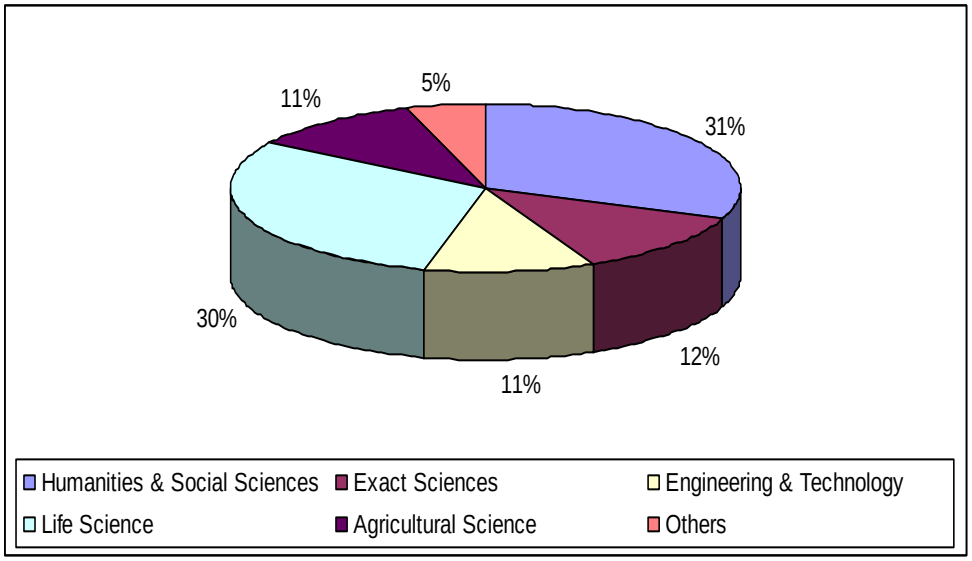
- Nº of programs: 1.819
- Nº of courses: 2.861
- Institutions: 196
- 35.000: MSc/year
- 11.000: PhD/year

Source: INEP / CAPES (2006)

Under graduation programs
x
fields of knowledge



Graduation programs
x
fields of knowledge



Source: INEP (2007) – Census / CAPES (2006)

The contributions of universities for the innovation systems

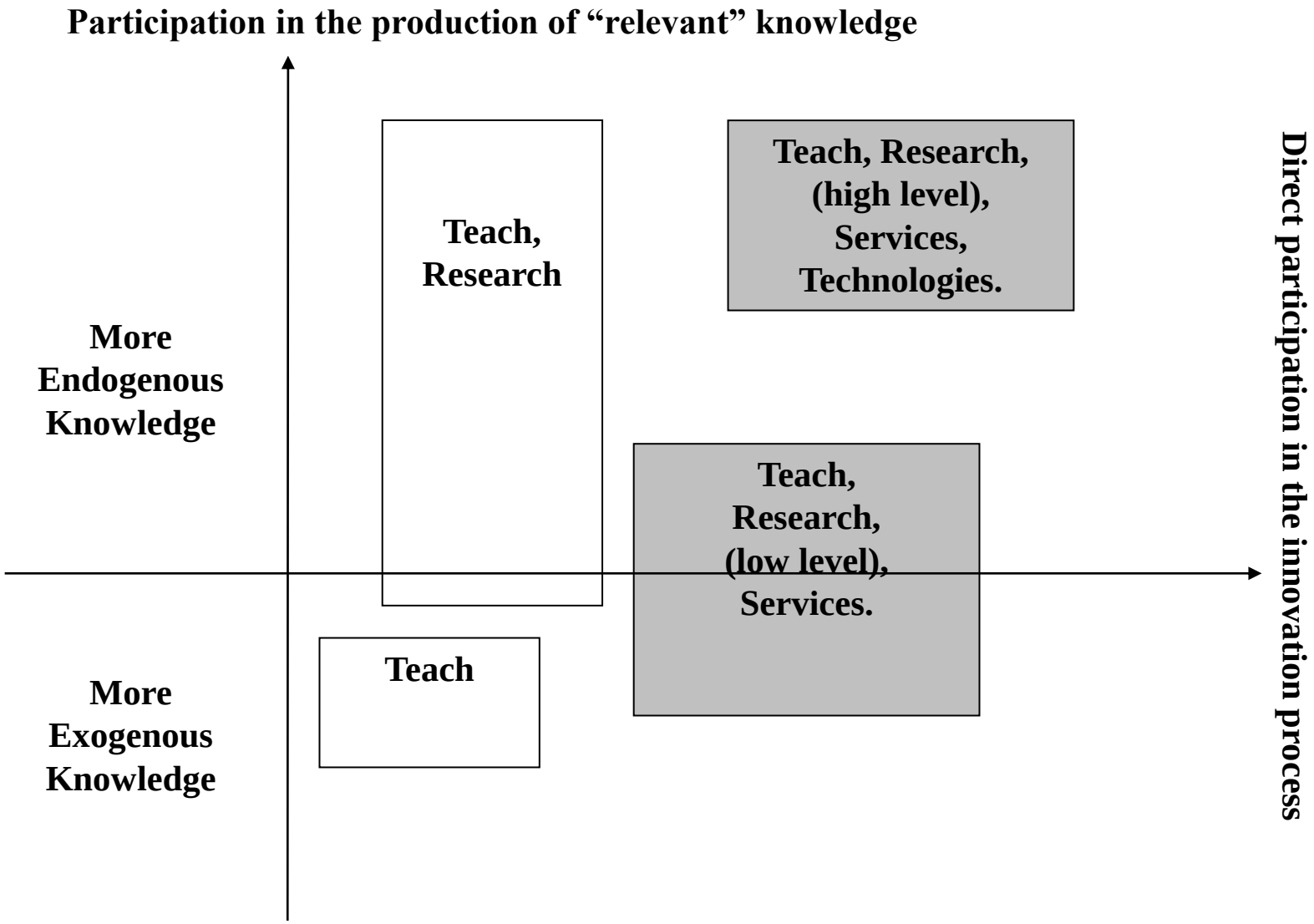
- Indirect contributions

- Human resources formation in strategic areas (teach mission);

- Knowledge production in strategic areas (research mission);

- Direct contributions

- Technology/knowledge transfer; spin-off formation (third mission)


Participation in the production of “relevant” knowledge
Teach, Research
Teach, Research, (high level), Services, Technologies.
More Endogenous Knowledge
Teach, Research, (low level), Services.
Teach
More Exogenous Knowledge
Direct participation in the innovation process

The Coordination of graduation programs in Engineering from Federal University of RJ (COPPE/UFRJ)

- 3.000 students MSc and DSc
- 300 full time professors (teach and research)
- 100 laboratories
- Business incubator (46 enterprises)
- Technology transfer office (66 patents)
- Research centres (Petrobras; Embratel; Eletrobras; Mining RC)

Theoretical framework

- Resource base view

- How the research structure affects the resources necessary for the spin-off formation?

- Institutional Approach

- Trajectory of the department; research group; researches;

Thank you!

Thiago Renault